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Hideo Taka

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT

PAPER NUMBER

1786

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,660	Applicant(s) TAKA ET AL.	
	Examiner Marie R. Yamnitzky	Art Unit 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This Office action is in response to applicant's amendment filed June 18, 2010, which amends claims 1, 2, 11, 13 and 14, and cancels claims 4 and 5.

Claims 1-3 and 6-16 are pending.

2. Claim 14 is listed as an "(Original)" claim in the listing of claims filed June 18, 2010. However, original claim 14 required "a substructure which exhibits an electron transporting property" whereas claim 14 of the June 18th listing of claims requires "a substructure which exhibits an positive hole transporting property" (emphasis added).

Given the status identifier and the lack of markings, the examiner presumes the change to claim 14 is an inadvertent error. However, for purposes of comparing to the prior art, the examiner has treated claim 14 based on the present claim language as well as the original claim language.

3. All rejections of claim 4 as set forth in the Office action mailed April 27, 2010 are rendered moot by claim cancellation.

The rejection of claim 1 under 35 U.S.C. 102(b) as anticipated by Tomiuchi et al. (GB 2 357 180 A) is overcome by claim amendment, as is the rejection of claim 1 under 35 U.S.C. 102(e) as anticipated by Kawaguchi et al. (US 2004/0051781 A1).

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 11, 12 and 15 stand rejected under 35 U.S.C. 102(b) as being anticipated by Tomiuchi et al. (GB 2 357 180 A) for reasons of record in the Office action mailed April 27, 2010.

6. Claims 11, 12 and 15 stand rejected under 35 U.S.C. 102(e) as being anticipated by Kawaguchi et al. (US 2004/0051781 A1) for reasons of record in the Office action mailed April 27, 2010.

7. Claims 1-3 and 6-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Bellmann et al. (US 2003/0068525 A1).

See the entire publication. In particular, see paragraphs [0002], [0005], [0021], [0026]-[0031], [0040]-[0060], [0071]-[0072] and [0134].

Bellmann et al. disclose various compounds that meet the limitations of a multi-branched structure compound per the present claims (e.g. see paragraphs [0047]-[0060]).

Bellman et al. disclose various structures within the scope of the core linkage group of the multi-branched structure compound as required for present claims 1-3 and 6-10. For

example, tetraphenylmethanes of formula 1 on page 5 include the present C-9 structure, dendrimeric triphenylamines as taught in paragraph [0054] include the present C-10 structure, and the dendrimer compounds taught in paragraph [0056] include compounds which comprise the present C-2 structure. In addition, given that present claim 1 does not limit what is present at each of the asterisks in the depicted structures, Bellman's disclosure also meets the limitations of at least the present C-1 structure because a phenylene group is a component of many of Bellman's compounds having a multi-branched structure.

Bellmann et al. disclose these compounds for use as an amorphous, non-polymeric, organic matrix, in combination with a light emitting material, to form the light emitting layer of an organic electroluminescent device. The organic electroluminescent device comprises at least the light emitting layer disposed between a pair of electrodes (an anode and a cathode) as per present claim 6 and dependents. In the process of making the device, the components of the light emitting layer are combined in the form of a solution as per present claim 11 and dependents.

Bellmann et al. teach that the compounds used as the matrix material may have hole transporting properties as per present claims 2 and 13, or electron transporting properties as per present claims 3 and 14 (e.g. see paragraph [0043]). The exemplary structures taught in paragraphs [0047]-[0060] include some structures which inherently exhibit a positive hole transporting property and some structures which inherently exhibit an electron transporting property.

Exemplary light emitting materials include fluorescent compounds as per present claim 15 (e.g. Alq3 and the lanthanide metal complexes taught in paragraph [0072]) and

phosphorescent compounds as per present claims 1 and 16 (e.g. the cyclometallated iridium compounds taught in paragraph [0072]; paragraph [0045] also explicitly teaches “triplet emitters”, which is alternative terminology for phosphorescent compounds).

With respect to present claims 7-10, see paragraphs [0028]-[0029] for example.

8. Claims 1, 2, 6 and 8-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kitano et al. (US 2004/0109955 A1).

(Claim 14 has been added to this rejection since claim 14 as shown in the listing of claims filed June 18, 2010 requires a substructure exhibiting a “positive hole transporting property”).

See the entire publication. In particular, see paragraphs [0010]-[0016], [0089]-[0091], [0117]-[0118], [0136], [0139], [0186]-[0210] and [0282]-[0284].

Kitano et al. disclose polymer compounds for use in the light emitting layer of an organic light emitting device comprising at least an organic light emitting layer disposed between an anode and a cathode (e.g. see paragraph [0191]). Various polymer structures are disclosed within the scope of Kitano’s formula (1) or formula (2) that meet the limitations of a multi-branched structure compound as required by the present claims.

Kitano et al. disclose structures within the scope of the core linkage group of the multi-branched structure compound as required for present claim 1 and dependents. For example, all of Kitano’s polymer compounds having Kitano’s formula (1) or formula (2) structure include the present C-10 structure. Each of the exemplary repeating units set forth in paragraphs [0089]-

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[0090] and [0117] also include the present C-1 structure, and some of these repeating units also include the present C-2 structure. (Other structures such as the present C-7 or C-9 structures can be considered to be met by the prior art repeating units containing alkyl groups such as Me or Bu since present claim 1 does not limit what is present at each of the asterisks in the depicted structures).

Kitano's polymer compounds are inherently capable of transporting holes, thus meeting the further limitations recited in present claims 2, 13 and 14. The polymer may be mixed with a light emitting material, which may be a fluorescent compound as per present claim 15, or a phosphorescent compound as per present claims 1 and 16 (e.g. see paragraphs [0193]-[0200]).

Kitano's polymer compounds are taught as being soluble in various solvents, and a layer comprising the polymer may be formed by dissolving the polymer and any other desired components, such as light emitting material, in a solvent (e.g. see paragraphs [0139] and [0204]-[0205]).

With respect to present claims 8-10, see paragraph [0187] for example.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. (US 2004/0109955 A1) as applied to claims 1, 2, 6 and 8-16 above, and for the further reasons set forth below.

(Claim 14 is included in this rejection with the expectation that the change in claim language from “an electron transporting property” as in original claim 14 to “an positive hole transporting property” as in the June 18th listing of claims was an unintended change.)

With respect to present claim 7, Kitano et al. do not explicitly teach a device emitting white light, but teach that the light emitting device may be used for various purposes such as a “back light of a liquid crystal display, a light source of curved or flat surface for lighting” (paragraph [0187]). These are purposes for which a device emitting white light would be desirable. Further, Kitano et al. teach various light emitting materials that may be used in combination with Kitano’s polymer in the light emitting layer of the device, and it was well-known in the art at the time of the invention that white light emission can be achieved by selective combination of different light emitting materials in a single layer, or by providing a device with multiple light emitting layers which, in combination, are capable of providing white light emission. It would have been within the level of ordinary skill of a worker in the art to provide a white light emitting device utilizing Kitano’s multi-branched polymer structure in combination with one or more light emitting materials, and one of ordinary skill in the art would have been motivated to do so when the device was intended to be used for a purpose in which white light emission was desirable.

Kitano's polymers are inherently capable of transporting holes as per present claims 2 and 13. Kitano et al. teach that the polymers may also comprise repeating units other than those of formula (1) or (2), and examples of these further repeating units include units which are inherently capable of transporting electrons as per present claim 3 (e.g. a metal complex having 8-quinolinol or its derivative as a ligand as taught in paragraph [0127]), and per claim 14 presuming "positive hole" should instead read --electron--. It would have been within the level of ordinary skill of a worker in the art at the time of the invention to make and use various polymer compounds within Kitano's disclosure, and to determine suitable combinations of repeating units selected from those taught in order to provide a functional light emitting device.

11. Applicant's arguments filed June 18, 2010 have been fully considered but they are not persuasive.

Claim 11 is an independent claim. The amendment to claim 11 as filed June 18, 2010 corrects an error of a typographical and/or grammatical nature, and does not alter the scope of claim 11.

While the Tomiuchi (GB '180) reference does not meet the limitations of claim 1 as amended, it continues to meet the limitations of claim 11, with claims 12 and 15 dependent therefrom.

Likewise, while the Kawaguchi (US '781) reference does not meet the limitations of claim 1 as amended, it continues to meet the limitations of claim 11, with claims 12 and 15 dependent therefrom.

With respect to the Bellmann (US '525) reference and the Kitano (US '955) reference, these references disclose multi-branched structure compounds as broadly defined with respect to claim 11 and dependents, and as more narrowly defined with respect to claim 1 and dependents. The rejections based on these references have been modified to address the core linkage group limitation added to claim 1 by the June 18th amendment.

Applicant argues that the Kawaguchi, Bellmann and Kitano references disclose a compound similar to the multi-branched compound of the present claims, but do not teach encapsulating a phosphorescent compound.

The examiner agrees that Kawaguchi does not teach a phosphorescent compound. The examiner did not previously apply Kawaguchi against claims requiring a phosphorescent compound, and has not done so in the present action.

The Bellmann and Kitano references each disclose that a phosphorescent compound may be used in combination with the multi-branched structure compounds, and that a layer of an organic electroluminescent device may be made by mixing the components of the layer in a solvent. Mixing of a phosphorescent compound (or a fluorescent compound as within the scope of present claims 11-15) with a multi-branched structure compound in a solvent provides encapsulation of a light emitting material in a multi-branched structure compound.

12. Applicant is advised that should claim 13 be found allowable, claim 14 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing,

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despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday and Wednesday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

/Marie R. Yamnitzky/
Primary Examiner, Art Unit 1786

MRY
July 30, 2010